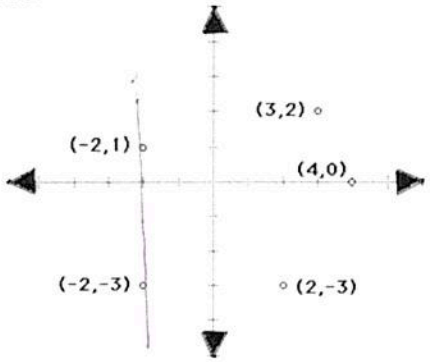
MTH 161, Quiz #1, Spring 2021 Name KEY

Instructions: Show all work. Use exact answers unless otherwise asked to round.

1. For the relation below, determine i) the domain and range, ii) if the relation is a function, iii) if it is a function, find the inverse.



D: $\{-2, 2, 3, 4\}$

R: $\{-3, 0, 1, 2\}$

not a function

fails VLT

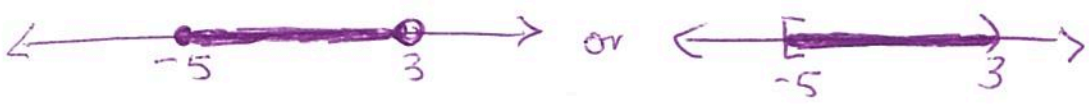
2. Consider the set of numbers $\left\{4, 0, \frac{4}{3}, 8.9, \pi, -22, \sqrt[3]{3}\right\}$. Which numbers belong to each set?
   a. $\mathbb{Z}$ $\{4, 0, -22\}$
   b. $\mathbb{Q}$ $\{4, 0, \frac{4}{3}, 8.9, -22\}$
   c. $\mathbb{N}$ $\{4\}$
   d. $\mathbb{R}$ $\{4, 0, 4/3, 8.9, \pi, -22, \sqrt[3]{3}\}$
   e. The set of irrational numbers.

$\{\pi, \sqrt[3]{3}\}$

3. List the numbers in the set $\{x | x \text{ is an even number between } 4 \text{ and } 11 \text{ inclusive}\}$

$\{4, 6, 8, 10\}$

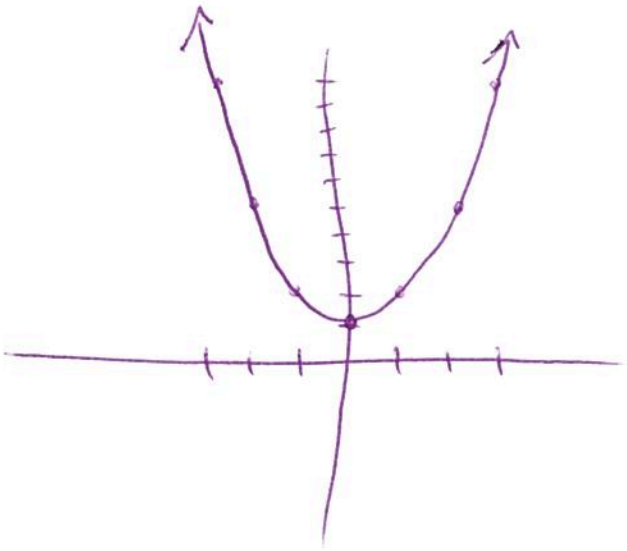
4. Draw the inequality $-5 \leq x < 3$ on a number line. Then write it in interval notation.



$[-5, 3)$

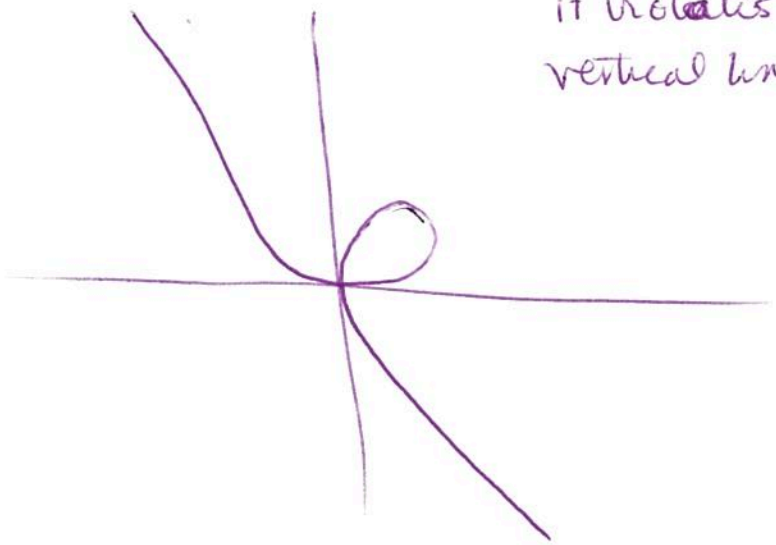
5. Use a table of values to plot the graph of $y = x^2 + 1$. Sketch the graph and include your table below.

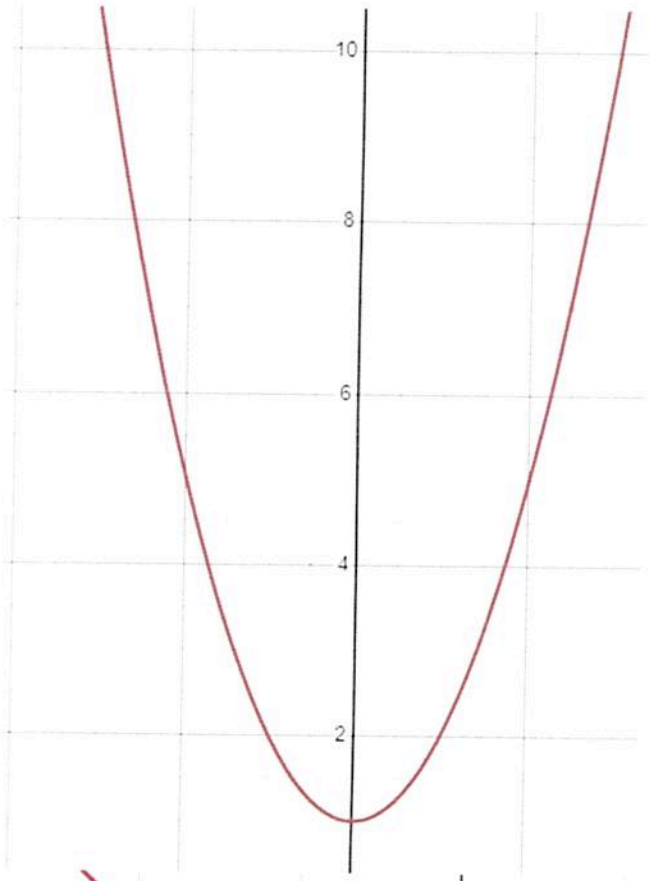
x	$y = x^2 + 1$
-3	10
-2	5
-1	2
0	1
1	2
2	5
3	10



6. Use technology like Desmos (https://www.desmos.com/calculator) to plot the graph of $x^3 + y^3 - 3xy = 0$. Is the resulting graph the graph of a function? Why or why not? (sketch the graph below)

it is not a function it violates the vertical line test





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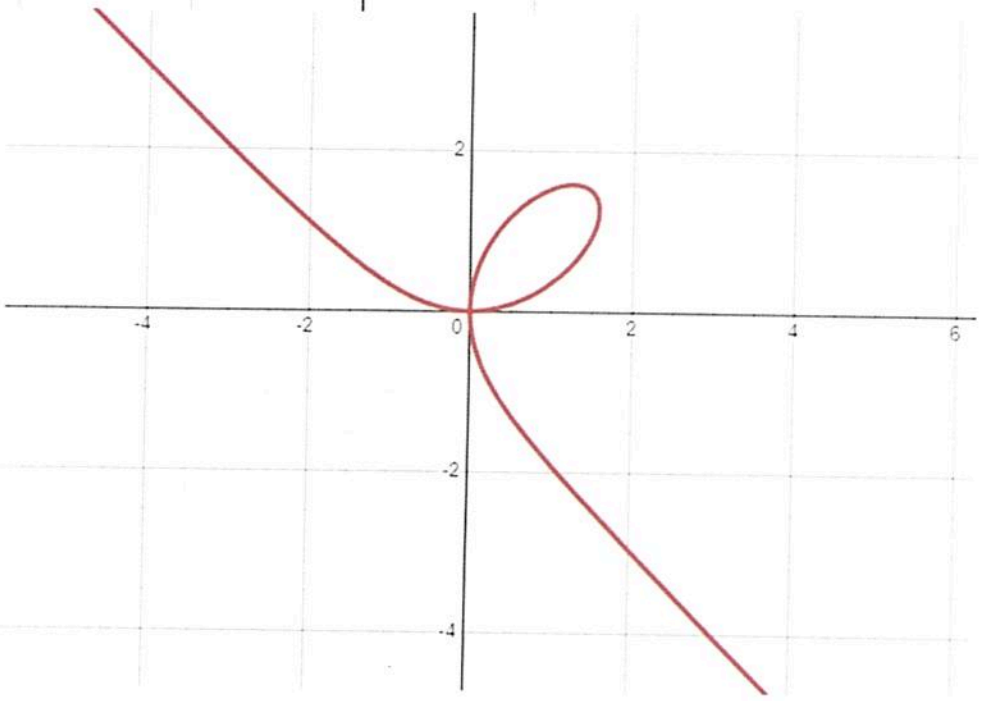

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